The Marvel of Irrigation

A Record of a Quarter Century in the Turlock and Modesto Irrigation Districts California

Compiled for the
BOND DEPARTMENT
The Anglo & London Paris
National Bank
San Francisco

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A record of a quarter century in the Turlock and Modesto Irrigation Districts - California

by

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BOND DEPARTMENT
THE ANGLO & LONDON PARIS NATIONAL BANK
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EL ZANJARO
(The Water Tender)

A characteristic in black and white
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Foreword

The security of a bond lies in the *ability of the debtor to pay it.*

The purchase of bonds on a large scale is and for many years has been a function of the Bond Department of The Anglo & London Paris National Bank. That the bonds, which this institution has purchased and recommended to others, have proven perfect investment securities is due to the fact that we have made purchases of and recommended to others only those bonds *which the debtors were able to pay.*

We have drawn a sharp line between *willingness to pay* and *ability to pay;* between a debtor's *good intentions based on hope* and his *ability to pay.*

Successfully to make this distinction is not a matter of chance or good luck. It is based on knowledge acquired carefully and, above all, without prejudice either for or against the security involved.

In the course of years, during which the Bond Department of The Anglo & London Paris National Bank has acquired a leading position in the field of Irrigation District Finance, we have actually seen develop an absolutely new type of rural life and enterprise. We knew that the new type was successful. From whatever angle we approached it, this fact stood out—that the irrigation farmer enjoyed a *vastly greater ability to pay* than had his predecessor, the dry farmer; or his contemporary of today who has not yet brought his land under irrigation.

We knew this ultimate fact, but we realized that we did not know the multitude of individual facts back of it. We know now.

This book, we hope, will be something more to the reader and to the public generally than a mere bond circular or advertisement.

It is the record of an agricultural revolution.

It is a record of fact so startling and thought compelling as to warrant the interest of every one.

To the Western business man it will indicate the vast possibilities only at the beginning of their development on the Pacific Coast.

To the farmer it will be a handbook by which he can estimate his progress.

To the investor, Eastern or Western, it will give those essential facts on which he can measure intelligently the value of his securities—*The ability of the debtor to pay.*

Two further considerations should be noted here.

First: The record which follows is the record of two irrigation districts, Modesto and Turlock. These have been chosen, not because they are exceptional, but because they are typical and because they have had *time* to progress farther than most other districts.

Second: The facts and figures herein are not rough approximations or the flights of fancy of a writer of advertisements, nor are they a record of hopes for the future.

The Bond Department of The Anglo & London Paris National Bank wanted facts and to that end it employed services of two men, trained to a study of facts and to a study of agricultural facts in particular.

Mr. R. L. Adams, Professor of Farm Management, College of Agriculture, University of California, and Mr. W. W. Bedford, Special Investigator, have spent many months in an intensive study of these two districts. Guesswork has been eliminated and in its stead we have exact information.

The Modesto District

In Stanislaus County, California, one of the first California districts to form under the Wright Act, is in the lower San Joaquin Valley about 90 miles southeast from San Francisco, and directly on the interior route from San Francisco to Los Angeles.

Brief Description of the District

Part of the Lower San Joaquin Valley

THE Modesto Irrigation District comprises 81,183 acres, bounded, roughly, on the north by the Stanislaus River, on the west by the San Joaquin River, on the south by the Tuolumne River, and on the east by survey lines arbitrarily selected by soil and contour conditions. The district is about 23 miles at its greatest length, about 10 miles at its greatest width, both length and breadth varying with the tortuous windings of the stream channels. The Modesto district is a part of the vast valley floor of the Great Interior Valley—the combined Sacramento and San Joaquin Valleys—an empire 50 miles by 380 miles, bordered by the towering Sierras on the east, and by the massive Coast Range on the west, the convergence of these ranges marking the north and south boundaries. The Modesto district claims a rightful place in a wonderful valley of many soil types, watered by many streams, as yet but thinly peopled, and wealthy in its undeveloped farming possibilities.

Soil Conditions

Soil is Typical of Entire San Joaquin Valley

Typical of the entire San Joaquin Valley, various soil types are represented and intermingled in the Modesto district. In general, however, there are nine rather distinct types, known technically as—

Madera and San Joaquin sandy loams, undifferentiated.
Oakdale sandy loams.
Fresno fine sandy loam (brown phase).
Madera loam.
Oakley and Fresno sands, undifferentiated.
Hanford loam.
Yolo loam.
Fresno sandy loam.
Fresno loam.

Classification as to Farm Value

To one not acquainted with the government method of classifying soils, these descriptions mean that the locality is made of several distinct soil types varying in texture, one with another, so that in a body of 80,000 acres, as one would think, many gradations occur, some classifying from an agricultural viewpoint, as specially desirable deep, sandy loams, easily worked, retentive of moisture, strong producers, fertile, level and eagerly sought for. From these lands other less desirable types occur as streaks or isolated areas, as a result of the early conditions under which the land was laid down. Here may be found occasionally hardpan or alkali or uneven topography.

Classified in this way we find the totals roughly estimated to range about:

		Acreage	Percentage
Especially high-class farm lands		26,624 acres	33
Good farm lands		45,334 acres	56
Fair farm lands		5,040 acres	6
Poor farm lands—			
Because of alkali	3,325		
Poor soil	860	4,185 acres	5
Totals		81,183 acres	100

Brief History of the Modesto Irrigation District

Organization Voted in 1887

In 1887 the people of what is now the Modesto district, voted to accept the provisions of the Wright Act and to forthwith pool their resources for the purpose of developing irrigation water. Decreasing yields of the limited number of crops possible under dry-farming methods—these being principally wheat and barley for this section—were fast reaching a point of little or no profit. Land which in its virgin state had produced annual crops of high yields had become, under constant farming, increasing costs of production, and keener competition, so reduced in possibilities, that realization was forced upon the section of the necessity of doing something radical.

Experiment Fought by Many Land Owners

All in the district were by no means convinced that the solution was to be found in irrigation, so we find the records replete with wranglings, discussions, legal proceedings, protests, charges, and counter charges.

But it all came eventually to an end, differences were sufficiently adjusted to permit progress being made, the financial backing was arranged for, construction started, so that by 1904 water was available and delivered to 7,000 acres of land.

Water for 7000 Acres in 1904; 59,000 in 1919

Since 1904, construction has gone steadily forward until in 1919 the district possessed 152 miles of canals and 44 miles of drainage system, delivering water to 59,000 cropped acres.

Out of the remainder, 7,000 acres is reserved and required for highways, roads, canals, ditches, buildings, and rights of way, 16,000 acres more enjoying the benefits of seepage, produces heavy yields of crops without the necessity of actually applying water to the land.

Greater Development Planned

Construction still continues, concrete structures are replacing those of less durable material, community ditches are being taken over while plans have been completed for launching the Don Pedro irrigation project which, it is expected, will double the water supply of the district, and include a power plant to furnish light and power for farmers and other assessment payers.

Construction Out of Direct Assessment

It is worthy of note in this connection that these Irrigation Districts have done something municipalities seldom do. The Modesto Irrigation District has taxed itself more than enough to pay the interest and to redeem its bonds as they fall due, and to pay for the maintenance and operation of its irrigation system. This surplus that it has raised by direct assessment it has put into improvements and construction which add to the capital value of its plant and the security back of its bonds.

Almost $1,000,000

The Modesto District expended for permanent improvements since organization, and prior to the year 1911, the sum of $233,000; from 1911 to 1917, $401,050; 1918, $63,709.23; 1919, $107,646.10; 1920, $99,340.71; making a grand total of $904,746.04.

Could have Retired 40% of Bonds

During the same period the interest charges of the District amounted to about $1,500,000 on bond indebtedness amounting to about $2,200,000. Therefore, the farmers of the district had they not made these improvements, without any greater tax burden might have paid 60% higher interest; or, had they diverted these sums to the immediate retirement of bonds, they could have retired about 40% of them.

Improved Farming Methods Keep Pace

The change from dry farming to irrigation farming took time. Land had to be ditched and checked for handling the water, large holdings cut up, new buildings erected, new fences put up, new roads constructed, more farmers brought in. Farmers accustomed to dry farming methods had to learn new crop methods and how to handle the water. Time had to elapse to permit the planting, caring for, and bringing to the productive stage of perennial crops—alfalfa, peaches, grapes, prunes, figs and other fruits.

Irrigation Gives Re-birth to Old Community

A study of the development of the district is most interesting.

In the following pages a brief account is presented of what has happened in this district as a result of applying water to the soil of the section, and the unlocking thereby of great potential agricultural possibilities.

Three Periods in Modesto History

For purposes of convenience, three rather separate periods may be recognized:

(a) The pre-irrigation period.
(b) The construction period.
(c) The post-irrigation period.

Pre-Irrigation Period Prior to 1900

In this discussion the following years have been rather arbitrarily chosen:

(a) For the pre-irrigation period the years 1890 to 1900, inclusive. This was a period of farming without water and under conditions less productive than had been the case in the past. It does, however, represent the period of declining yields which finally resulted in the formation of the district.

Construction and Transition Period 1901-1915

(b) The years 1901 to 1915 represent the constructive period—a time of reorganization and readjustment, a time of subdivision, of experimenting with new crops, of learning new methods; a time of planting out alfalfa, vines and fruit trees from which returns could not be expected prior to the lapse of several years; a time of transition from barley, wheat and other field crops to dairying, hogs, and poultry; a time of establishing new markets and industries to properly prepare the farm products for disposal—creameries, canneries, stock buyers and warehouses.

Realization Period 1915-1919

(c) The years 1915 to 1919, inclusive, have been chosen to represent the post-irrigation period, because enough years are included on the one hand to insure an idea of average production after the district was pretty well established and, on the other, to avoid using the relatively high prices of the last year or two.

Comparison, Before and After Irrigation

In this study, our aim has been to investigate the state of affairs prior to the securing of water, and subsequent to the securing of water, and to compare this with the final outcome. No special attention has, therefore, been paid to the construction period. It may, however, be pointed out in passing that our studies show a marked improvement in the affairs of the district from the time that the first appreciable effects of the turning on of water were experienced. For instance, we find that many owners of land in the pre-irrigation periods sold out during the demand for lands after water became available, and have lived in town ever since on the interest of moneys thus obtained.

Individual Credit Improves

The status of defalcation was materially reduced both in numbers and amounts with the advancement of plans for irrigation.

Brief Description of the Pre-Irrigation Period

To fully realize what irrigation has done to the Modesto district, one should first attempt a mental picture of conditions prior to the formation of the district. Similar conditions are still to be found in various California sections where irrigation water cannot or has not as yet been developed.

Modesto Typical Dry-Farming District

An extensive strip of country devoted solely to grain growing presents a rather monotonous succession of treeless and vineless fields, sometimes undulating although usually level, separated at intervals with barbed wire fences.

Isolated groups of farm buildings—usually consisting of a dwelling, extra large barn, a few out buildings, windmill and

Dis-spiriting Area

tank tower, occur at intervals of one to two miles apart. Situated in treeless stretches, seldom adorned with any landscape effects, and often blameless of paint or repairs, frequently cared for by a tenant farmer, they are not especially inviting nor homelike. The holdings of necessity are large and social intercourse is somewhat restricted. The family keep rather much to themselves—extra help when it is needed, being recruited from a class of labor which is best satisfied if left to itself. Brown fields kept bare for one and sometimes two summers (to free the land of weeds and to store the rainfall of one or two additional seasons to insure sufficient moisture when a grain crop is finally planted, this being the so-called "summer fallow" method), alternate with the planted fields. The latter, green in winter and early spring, golden brown in early summer, dark and dusty in late summer, renovated and mellowed by the fall rains, plowed in November and December for the fallow to follow, fanned by the hot dust raising winds of the dry season, of the frosty drafts of the cold period, now and then blanketed with thick land fog, again luxuriating in the sunny, bright, cheerful days of spring and early summer, unfold a kaleidoscopic change of scene as the year rolls round, some pleasant, some disagreeable, all—after one gets over the novelty of it—rather monotonous.

Large, Isolated, Unkept Farms

Town Reflects Declining Prosperity

In the days before irrigation was an accomplished factor, Modesto, the only sizeable town in the district, was a typical town of the grain growing country. Its general appearance reflected the declining prosperity of the country upon which a strictly agricultural town must rely for its existence—rough, unpaved streets—muddy in winter and dusty in summer, its stores a collection of mostly one-story unpainted rickety frame buildings, its water supply from private wells, its sewerage nil, its lighting system coal oil lamps, its population but a few hundred people, its resources two banks with combined wealth of about $1,000,000, one school of two hundred and fifty pupils, two so-called hotels, four churches, three general and one hardware store, three blacksmith shops, one flour mill, one weekly newspaper, two butcher shops, five grain warehouses, four livery stables, and sixteen saloons.

Brief Description of the Post-Irrigation Period

Irrigation Brings New "Mode of Life"

Farming, it is said, is a "mode of life." If this is so, then the real test of a farming section is to be found in the home building of its people. Applying this test, as a preliminary, to the Modesto district, one soon finds full justification for all the time, thought, energy, and money spent in its water development. For the outstanding feature, which first strikes the investigator, is that the district is essentially a home district. Pretty bungalows and tidy dwellings, lawns, vine covered porches, roses and old-fashioned flowers, shade trees, and well-kept grounds are strong testimonials that a home-loving people are settling in the community. This is perhaps the first and most outstanding feature. The small size of the holdings bring the houses rather close together, and a drive in any direction in the most fully settled sections unfolds a succession of pretty homes and a general spirit of contentment. Modesto has for its slogan, "Water, Wealth, Contentment, Health." Perhaps these words posted at the depot where all comers may read may have a psychologic effect on the community, but we are inclined to believe that the slogan is an outcome of conditions rather than conditions the result of the neatly turned phrase.

Many Small Farms Replace Few Large Ones

Diversified Agricultural Life

In a community of varied interests, the drawing of a mental picture rests largely with the individual. Certain features strike one observer more forcibly than do others; the next observer has his attention caught by something entirely different. To the one to whom irrigation is a new thing, the appearance of the land prepared or being prepared for irrigation, with the attendant canals, ditches, submerged siphons under the roads, level checks, and scraped up borders will make a marked impression. The next visitor, not used to the wide divergence in farming practices, will have his attention caught by the ever varying types of agriculture represented. Specialized farming vies with diversified, intensive and extensive. That this is so may be better understood when one realizes that the district is still far from its maximum development, a conservative estimate placing its present status at less than ONE-HALF of its ultimate possibilities if present method of organization continues. So one finds an intermingling of farms and of industries to a major extent of peach, fig, prune, grape and olive, some oat, barley and wheat for grain and hay production, field crops of alfalfa, Egyptian corn (a non-saccharine sorghum), beans, rice, peas and melon, dairying to a marked extent, hog production, commercial poultry and eggs, honey production, some truck and a small miscellaneous group.

Potential Possibilities Not Yet Half Developed

The kinds, types, and numbers of farm buildings attract notice. They are mostly substantial, some perhaps of a temporary nature pending a period of greater prosperity—numerous, well-built and homelike.

Structures Indicate Growth: Earlier Ones Decay

Today it would be hard to find a more prosperous, bustling, progressive town than Modesto. Its population has increased nearly ten-fold, its streets are paved, its business blocks two and three

Town is Prosperous and Progressive

stories in height, built of durable brick, concrete and stone, its resources four grammar schools, a high school with six hundred pupils, a departmental school, a modern public library, five banks that show total combined deposits of $9,131,244.00, and whose total resources are $12,591,477. This probably represents but a part of the total wealth of the community as nearness to the banking centers of San Francisco is bound to exert its influence in causing large deposits to be made in that city. Numerous large mercantile and industrial establishments, garages, small specialties businesses, two daily newspapers, a complete municipal water system, sewerage system, and full electric light and power equipment.

City of Homes

Modesto is essentially a "home" town. Civic pride is reflected in its flowers, its street trees, its parks, its school system. Home pride shows in its neat, well kept, and ofttimes, pretentious homes.

To-Day

Intensified Farms Create Need of More Water

Constructive work still goes on in developing the Modesto district. As the district is settled up and farming operations increase in intensity, need is evident for an even greater supply of water. A shortage was felt during the past year as a result of three consecutive years of scanty rainfall in the valley and light snowfall in the mountains, so that the Tuolumne River, in common with other streams of the state, had rather unusual demands upon it. Plans now under way provide for a new bond issue of $2,000,000 to be used for the purpose of augmenting the water supply. If the election carries, and this seems almost certain, the district will voluntarily assume a bonded indebtedness of $4,214,121 or $52.50 total per acre. *(The election has carried.)* To meet the added charges, certain of the less advanced portions of the district will be reorganized, and the existing production of grain decreased.

Summary

Irrigation in the Modesto district has, therefore, been the agency which has transformed a vast, rather tiresome stretch of grain fields, broken at only infrequent intervals with semi-occasional roads, unadorned farmsteads, and precise fences; a country producing only hay and grain into pleasant communities of homes, trees and green fields, peopled with home-building farmers, devoted to the production of a wide variety of farm products.

* *

In the section immediately following are compilations showing in detail the change --a fundamental change--wrought in the Modesto District by the application of irrigation. It is not a repetition but a confirmation of the above summary of a remarkable experience in agricultural development.

What Water Has Done

for the

MODESTO DISTRICT

A comparison in detail of
the Pre-Irrigation Period
and the
Post-Irrigation
Period.

Figures to Aid Description

IRRIGATION has brought about a striking contrast in the condition and appearance of the section. Figures show this rather more pointedly than description, and in the following pages an attempt is made to compare conditions of the pre- with those of the post-irrigation periods.

Change in Number and Size of Farms

81 1000-Acre Farms Now 2025 40-Acre Farms

In the pre-irrigation period there were but *81* farms, averaging in size about 1,000 acres. The same area now supports *2,025* farms, averaging in size about 40 acres. And it is interesting to note that the district is far from fully developed. An estimate of the degree of intensity of operations places the district as being somewhere between one-third and one-half developed, while common opinion is to the effect that farm specializing in certain lines, as fruit, poultry, and dairying, and operating with family labor, can to advantage be reduced in area from the present average.

Change in Population

Increase in Population

Closely correlated with multiplying the number of farms because of the development of water, is the resulting increase in population. The district is primarily and essentially agricultural. There are no independent industries of mining, manufacturing, or commerce. The towns are entirely dependent on the surrounding country, and their prosperity is directly proportional to that of the district. There is only one town of real importance—the town of Modesto—although small settlements are scattered here and there throughout the district—as Salida, Clauston, Butler's Corners and Tuolumne City. In the pre-irrigation period, we find the average farm family consisted of six persons, and the population of the countryside to be between 1,000 and 1,500. For the decade the town of Modesto averaged about 2,200, although toward the last of the period, because of slack business conditions, the population fell off somewhat.

District Wholly Agricultural

In general, the total population has risen steadily and substantially from a pre-irrigation total of *3,500,* until toward the close of the period we find a rural population estimated at *10,000* and the town of Modesto with a figure of *14,000,* making a total of *24,000.* And this, in the face of an average family now averaging but four as against six in pre-irrigation times. In discussing population increases, it is important to note that the town of Modesto enjoys certain industries made possible only by irrigation, in that they draw on the rural section for their raw materials, the

Population Once 3500 Now 24,000

production of which has been made possible solely because water was developed for use in growing the basic crops. These industries, to which reference will again be made, give employment to an average payroll of 1,230 people, all of whom make their homes in Modesto and materially affect the population figures of this town.

Change in Land Values

Market Value of Land Eight Times Greater

The effect of irrigation upon land values is especially outstanding. In the pre-irrigation period the land in the district, not including buildings or other improvements, had a market value of $2,410,000, or around *$30.00 per acre.* During the post-irrigation period, the average price for the same land ranged close to *$250.00 per acre* for the *entire district* (not excluding 16,000 acres still undeveloped), the values ranging from $100.00 on the one hand for lands as not yet developed, to $800.00 per acre, and in some instances even more, for lands in fruit, or highly developed in specialized lines of farming. This gives a total valuation (excluding improvements) to the district of $20,000,000.

Change in Value of Farm Equipment

Immensely Greater Investment in Equipment

Naturally the number of farms has resulted in a substantial increase in the value of the equipment and improvements. In the pre-irrigation decade figures for the more outstanding items amount to:

Buildings, fences and other structures	$445,500
Motive power	243,000
Implements, machinery, wagons and miscellaneous	269,325
Total	$957,825

For the post-irrigation period, the totals are:

	Average for 5-year Period
Buildings and other structures	$6,075,000
Motive power	3,531,600
Livestock	3,442,500
Implements, machinery, wagons, and miscellaneous	2,523,250
Total	$15,572,350

Change in Production of Wealth

Since irrigation water is applied for the specific purpose of producing crops which, in turn, are sold as primary products, or fed and sold as stock or stock products to increase farm income; the effect of the developing water upon the incomes of the district is of first importance. In the pre-irrigation days the average annual value of farm products amounted to about:

Annual Gross Income $578,000 Against $8,785,000

Wheat	$336,000
Barley	230,000
Stubble	12,000
Total	$578,000

Hogs and dairy cows kept for family use, and a few minor products, as rye, too small in value to include.

For the post-irrigation period the average annual gross value of the farm products amounted to about $8,785,000, the return being made up in order of importance from (1st) dairy products, (2d) field crops as beans, rice, hay, Egyptian corn, (3d) barley, wheat, and oats, (4th) fruits, (5th) poultry, (6th) cattle, sheep, and calves, (7th) hogs, (8th) honey, (9th) garden truck. (It will be noted that these figures are of years before present abnormally high prices.)

Gross Income Is Four Times Bonded Debt

The value of the gross annual revenue therefore is at the rate of *four times* the present bonded debt.

Change of Gross Profits

The real test of whether irrigation pays or not is to be found in the ability of the farmers to declare a profit upon their operations, or to accumulate a reserve for use in making improvements or in discharging obligations promptly and cheerfully. How this has worked out in the Modesto area was a matter of special study. This may be found by deducting from the gross income sums to cover costs of operation which include items of payment for labor other than that of the operator, in plowing, planting, and hauling off seed, contract cost of harvest, horse feed, sacks, warehouse and selling expense.

In the pre-irrigation period, the annual operating costs amounted to $227,000. Deducted from the gross receipts, $578,000, there remained available as profits, to meet various financial obligations, for family living, to replace equipment, or to institute improvements, the sum of $236,911. Figured in the same way for the post-irrigation period, the operating expenses amount to close to one-half of the gross income, or $4,392,500 which, deducted from the average gross income, $8,785,000, leaves available for other uses $4,392,500.

Net Income Almost Ten Times Greater

Change in Tax Rate

Taxation Higher but Less Burdensome

The average state and county tax rate for the pre-irrigation district was from $1.25 to $1.50 per $100.00, and property was assessed at about 50 per cent. This means a tax income for the farming community of about $25,000.00.

The post-irrigation period carries an increase in the state and county tax rate to $2.40 per $100.00, with property assessed at about 50 per cent of its market value and a tax income of the district in an amount close to $400,000, which has materially aided in civic improvement and local administration. To cover the expense of constructing, maintaining, and operating the irrigation system, assessments are made each year in accordance with law computed on operation, construction, maintenance, betterments, replacements, interest on bonded debt, and retirement of bonds falling due. The rate is assessed as a flat charge against each acre (or lot) in the district. The average rate is about $4.00 annually per acre. There are today 3,500 assessment payers; 2,025 of these are in the rural districts, the balance in the town of Modesto.

City Bears Large Share of Taxes and Assessments

The City of Modesto, containing 1,700 acres, bears its share of assessments, and pays about 23 per cent of the entire tax of the district. Valuation is on the basis of town lots in lieu of acreages.

Increase in Allied Industries

Many New Industries Made Possible

Because of a change in the amount and character of the agricultural output of the district resulting from the transition to irrigation, farming industries, depending for their existence on the farm output, have established a base in the town of Modesto, such plants as—

Borden Condensed Milk Co.
Pratt-Lowe Preserving Co.
Modesto Creamery.
Valley Ice Plant.
Cement Pipe Mfg. Co.
Modesto Milling Co.
Carpenter Cheese Co. (in Salida).

The combined investment is about $1,250,000—a sum directly traceable to the development of water. The value of new buildings put up in 1919 figures $1,096,995 —an increase of nearly 900 per cent over average building during the war years 1914-15-16-17.

Change in Defaulting

Mortgage Defaulting Almost Unknown

Whereas in the pre-irrigation period more than 60 per cent of all holdings carried mortgages, of which 25 per cent were subsequently foreclosed, in the post-irrigation period for an average of the last ten years but two mortgages per year have been foreclosed. Sales of land by trustees in deeds of trust are not publicly recorded for the years 1915-1919, but private abstract records show that annually for this period the figure stands at about four per year.

Indebtedness Paid Off

Today about 40 per cent of the holdings are mortgaged at from 40 to 60 per cent of their value. It is the custom to sell land on a cash payment down and to have a local bank carry a mortgage for the balance. In this connection it is interesting to note that recently many owners of property have liquidated their indebtedness; that many other mortgagees carry substantial bank balances while still others have negotiated larger loans for the purpose of assisting them in the acquisition of more land.

Three local banks extensively engaged in loaning money to farmers report that they have not had an occasion in ten years to foreclose a mortgage or sell encumbered farm property under trust deeds.

Summary of the Modesto District

For the purposes of ready reference, the various data are here condensed into tabular form:

Item—	Conditions 1890-1900 Pre-Irrigation	Conditions 1910-1920 Post-Irrigation
Number of farmers	81	2,025
Average size of farms, acres	1,000	40
Population: Rural	1,300	10,000
Town of Modesto	2,200	14,000
Total	3,500	24,000
Land values per acre average	$30	$250
For district, total	$2,410,000	$20,000,000
Value of improvements and equipment	966,735	15,572,350
Total value of farm property	$3,376,735	$35,572,350
Average annual gross value of farm output	$578,000	$8,785,000
Operating cost to produce	227,000	4,392,500
Available for profits, family living, replacement of equipment, obligations, or instituting improvements	$351,000	$4,392,500

Private Pumping Plants

There are about twelve or fifteen pumping plants in the entire district covering in all less than 400 acres, the largest acreage under private irrigation being about 100 acres. The average holding under private pumping plant is about 25 acres.

The Turlock District

Adjoins the Modesto Irrigation
District on the south, being separated from it by the
Tuolumne River.

Brief Description of the District

THE Turlock District, contiguous to the Modesto District, and separated from it on the north by only the middle of the Tuolumne River, parallels Modesto in the history of its development. Similarly it enjoys the same advantages of situation as does Modesto.

History Parallels Modesto

Because of its extensive area the Turlock District is spread out in two counties, Southern Stanislaus and Northern Merced. The District comprises 176,200 acres, mostly lying in a body measuring 18 miles at its greatest width and 23 miles at its greatest length, plus a tail or strip of territory one-half to a mile in width extending in an easterly direction for a distance of about 18 miles along the Tuolumne River. Its boundaries are roughly outlined by the Tuolumne River in the north, the San Joaquin River in the west, the Merced River in the south, and boundaries of sections 21-16-9-4-33-28-21-16-9-4-34-22-13 and 10, Townships 4, 5 and 6, Range 11 East, M. D. B. & M.

Certain Acres Above First Irrigation Level

In general the topography varies from level to rolling, with certain areas too rough for economical preparation for irrigation under existing conditions. The area is made up of nine soil types technically known as:

Fresno sandy loam.
Fresno sandy loam (brown phase).
Madera and San Joaquin sandy loam, undifferentiated.
Oakley and Fresno sands, undifferentiated.
Fresno fine sandy loam.
Fresno fine sandy loam (brown phase).
San Joaquin sandy loam.
Hanford loam.
Fresno loam.

Freed of technical terms, this means an intermingling of soil types most of which are of a sandy nature, easily worked, fairly fertile, rapidly and thoroughly irrigated; soils in which crops mature quickly and evenly. From soils which may be termed "excellent" from an agricultural standpoint, the grades run down until certain types, because of the presence of stiff tenacious layers, hardpan or alkali, possess only a minimum of agricultural value.

Farming Classification

An estimate of the soils represented by this classification gives:

	Acreage	Percentage
Excellent	95,700	55
Good	45,100	25
Fair	25,270	14
Poor (mostly because of alkali)	10,130	6
Totals	176,200	100

One Large Town, Five Small Ones

The district is solely agricultural. It possesses one large town—Turlock—covering 600 acres and credited with a population of 5,000, while small settlements of a few hundred people are scattered through the district. Typical are the hamlets of Keyes, Ceres, Denair, Hickman, and Hughson.

Brief History of the District

First Irrigation in 1901

Turlock voted for a district in 1887, overcame its troubles of financing and litigation, and got sufficient construction under way so that water was first available in 1901, 3,700 acres being irrigated. Three years later, 20,000 acres were under irrigation, while today, January, 1920, 101,419 acres are actually irrigated or about 57 per cent of the entire area, by means of 245 miles of canals and laterals and 1,000 miles of community ditches and sublaterals. Of the 176,200 acres 16,000 are taken up by roads, canals, laterals, highways, district buildings, etc., leaving 160,200 susceptible of being irrigated. Construction is well done. Ninety per cent of the flume crossings are of concrete, many ditches are cement lined to reduce losses in transit, and 57¾ miles of drainage canals have been put in.

5518 Assessment Payers in District

As an outcome of the district bonding itself, there are now 5,518 assessment payers of which 1,518 are in the Town of Turlock, paying assessments for the irrigation improvements amounting to $3.19 per acre per year for an average of ten years, with a rate of $3.40 per acre in 1919. In 1919, total assessments brought in $410,906.73, while, with the beginning of 1920 the total bonded indebtedness amounts to $2,662,000. Present plans designed to increase the bonded debt to an amount of $4,108,000 (recommendation of the State Bonding Commission, January 12, 1920) for the construction of the Don Pedro Reservoir in connection with the Modesto District, if favorably passed will increase the total per acre indebtedness to: *(This has been passed.)*

	Total	Per acre
Present bonded indebtedness	$2,662,000	$15.10
Proposed bonded indebtedness	4,108,000	23.39
Total	$6,770,000	$38.49

Changes Wrought by Irrigation

More Striking Changes Than in Modesto

The Turlock District is a second example of the extensive and almost unbelievable changes in its agriculture, population, farm output, and town prosperity, due to the putting on of water, the first example having been already chronicled under the Modesto District account. If anything, Turlock possesses a larger proportion of poorer soil types, especially blowy sands, so that the transition is perhaps more striking.

As in treating the Modesto District, three periods may be considered for the Turlock District, these being:

(a) The pre-irrigation period.
(b) The construction period.
(c) The post-irrigation period.

The initial resort to irrigation, the evolution, and the final result follow almost exactly the Modesto transition with some difference in types of agriculture and the various figures. The history, as outlined for Modesto, will also suffice for Turlock. As for Modesto, for purposes of comparison, the pre-irrigation period is averaged over the years 1890 to 1900, inclusive, and the post-irrigation period for the years from 1914 to 1920.

Turlock Becomes a City

The Town of Turlock has changed from its pre-irrigation status of a heterogeneous collection of ramshackle buildings consisting of one general store, one small grocery store, one so-called hotel, two blacksmith shops, five saloons, and one district school with an enrollment averaging about 45 pupils; sandy streets, dusty in summer and muddy in winter, and a general lack of civic pride, to a rapidly growing, flourishing town of pleasant homes, durable business houses, paved and shaded streets, and all that goes to show the pride and thrift of a people in their community. Today, in addition to the assets listed elsewhere, the town possesses ten churches, a high school (465 students now enrolled), two grammar schools (1021 pupils), two banks, ten mercantile concerns, two hotels, and two theatres.

Eight Banks Organized

All the banks in the district have been organized since 1905, and have resources as follows:

First National of Turlock	$1,530,000
Commercial Bank of Turlock (allied with First National)	713,000
Hilmar Branch, First National	194,000
Denair Branch, First National	100,000
People's State Bank of Turlock	654,306
Savings Department, People's State Bank of Turlock	324,714
Bank of Hughson	425,000
Bank of Ceres	410,000
Total for eight banks	$4,351,020

Change in Agriculture

Grain Sole Crop of Dry Farmer

Prior to the coming of irrigation to the Turlock District, grain growing of barley, wheat and some rye had been persisted in for several years although decreasing yields were forcing farmers out. In fact, the farmed acreage had become reduced to only about 25 per cent of the available acreage, yields amounting to but eight sacks of wheat and ten sacks of barley on land planted once in two years.

Irrigation water to the Turlock region has meant: (1st) a rehabilitation of its agriculture; (2d) an extension of the

Immense Diversity Under Irrigation

farmed area of the pre-irrigation days, and (3d) a remarkable increase in the variety of crops grown, so that for the post-irrigation period the list covers alfalfa, beans, cantaloupes, casabas, water melons, non-saccharine sorghums, garden truck, tomatoes, sweet potatoes, barley, wheat, oats; dairy products; some hogs; honey; deciduous fruits of peaches, figs, apricots; berries; poultry and poultry products; wine, table, and raisin grapes.

What Water Has Done

to the

TURLOCK DISTRICT

❧

A comparison in detail of
the Pre-Irrigation Period
and the
Post-Irrigation
Period.

Change in Number and Average Size of Holdings

4000 Farms Instead of 140

UNDER the dry farming methods of the pre-irrigation period there struggled for existence a total of 140 ranches of an average of *1,250* acres.

With the on-coming of irrigation water, the district now supports 4,000 farms having an average size of close to 40 acres.

Change in Population

950 Rural Population Increases to 15,000

Rural Districts: In the pre-irrigation period, the rural population was about *800* which, following irrigation and the possibilities of intensive farming to support increased numbers, has jumped to *10,000.*

Town of Turlock: The population of Turlock shows an increase, conservatively estimated, at from *150* of pre-irrigation times to *5,000* for post-irrigation period.

Totals: The totals stand:

Population of pre-irrigation decade, 950
Population of post-irrigation period, 15,000

and this in view of a drop from an estimated figure of five persons rural family of the earlier period to four of the present day.

Change in Land Values

Greater Production Increases Land Values

Market values of the land for pre-irrigation times, averaged but $25.00 per acre, thus giving the district a total gross value of land without equipment of $4,403,000.

Market values of the land for the post-irrigation period where water was available for growing crops commanded *an average per acre* figure of $200.00, while lands, not under ditch but enjoying the added prosperity of the section and thus indirectly benefiting from the development of water, are now worth about $100.00 per acre, thus giving the district a conservative total of—

Total acreage	176,200
Out for district uses	16,000
Net for farming	160,200

Irrigated, 101,419 acres at $200.00	$20,283,800
Not as yet irrigated, 58,781 acres at $100.00	5,878,100
*Total	$26,161,900

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*Appraised by California State Bond Commission at $30,000,000.

Change in Equipment

Immense Addition to Equipment

Equipment needs and values for both pre-irrigation and post-irrigation times duplicate the figures given for Modesto on a per farm value, for buildings and implements, but are reduced somewhat for stock.

Totals amount to, approximately, as follows:

	Pre-irrigation Decade	Post-irrigation Period
Buildings and other structures	$770,000	$12,000,000
Motive power	420,000	3,800,000
Livestock (only for family use)	0	2,163,000
Implements and machinery	466,200	4,084,000
Totals	$1,656,200	$22,047,000

Change in Production of Wealth

Gross Income Multiplies Over 26 Fold

An estimate of the annual gross value of farm products for the pre-irrigation decade gives returns to the farmers of the district of not to exceed $345,000, which certainly is not a good showing for 176,200 acres.

The average annual value of the 5-year post-irrigation area figures about $9,000,100, of which, in order of importance are—

(1st) Field crops—beans, corn, sweet potatoes, barley, wheat, oats, and alfalfa hay.
(2d) Cantaloupes and other melons.
(3d) Fruit.
(4th) Dairy products.
(5th) Poultry and poultry products.
(6th) Miscellaneous.

Change in Gross Profits

Net Income Increases from $202,000 to $4,500,000

Of the $345,000 gross returns obtained on an average for the pre-irrigation decade between $115,000 and $172,500, was required for operating expenses, of seed, sacks, extra labor, taxes, and similar cost details of, or about, $143,000. This left an average balance of $202,000 for profit, family living, replacement of equipment, discharge of obligations, and institution of improvements. Suffice to say, the sum was not enough, as shown by the failure of the farming operations.

Averaged for the post-irrigation period, the cost of production required about one-half of the gross income, or $4,500,000, leaving an equal sum available for other uses.

Construction Out of Direct Assessment

In discussing the Modesto District, note was made of the fact that almost $1,000,000 had been collected by assessment for additional construction and improvements which added directly to the security back of the district's bonds. Turlock has done the same, expending a total of $1,151,027.50.

Farmers Could Stand Higher Charges

The total amounts of interest paid on Turlock bonds during the same period was $2,218,122.31. In other words, if the district had not done this additional construction work it could have paid half again as much interest without feeling it, or it could have retired about 40% of its outstanding bonds.

The figures are as follows, and the almost continual increase in this item is worthy of especial note:

1902	$7,153.82
1903	9,238.35
1904	....
1905	13,657.42
1906	165.26
1907	....
1908	7,150.84
1909	4,236.94
1910	593.35
1911	33,877.54
1912	58,541.20
1913	79,709.07
1914	153,123.93
1915	103,244.87
1916	106,077.04
1917	80,253.08
1918	200,841.76
1919	293,163.03
Total	$1,151,027.50

Farmers Contribute 50c to Every $1.00 Borrowed

This means that for every dollar of money which the district raised by bonds—by borrowing, in other words—it has invested 50c of its own money in addition. Its irrigation plant represents a capital investment of about $3,800,000 of which it has borrowed only about 70%.

Responsible Debtors

This is the mark of a responsible debtor, the desire and ability to tax himself beyond his immediate needs and thereby to add to his creditors' security. That these irrigation districts are responsible debtors is reflected in the high regard in which investors hold irrigation district bonds.

Immense Security

It should be borne in mind also, and is repeated here to avoid confusion, that the value of the irrigation system is the smallest item of the security back of the bonds. The value of the land itself and all of its improvements, details of which are set out in other pages of this record, are immensely greater than the cost of the irrigation system, and in this land and its improvements and the irrigation system the bonds use a lien prior even to first mortgages.

One-fifth of Bonds Owned at Home

Another remarkable item, both as showing the soundness of the districts and the financial ability of the debtors, is the fact that over 20% of the bond issues of the two districts are owned within the districts. In other words, these farmers have, by the very fact of their increased prosperity under irrigation, been able to buy upward of $1,000,000 worth of their own obligations, and have been so well satisfied of the worth of those bonds that they have no hesitation in putting their money into them.

Increase of Allied Industries

Allied Industries Created

The effect of irrigation upon the agriculture of the Turlock District and the resulting change from dwindling grain crops to the conducting of a varied number of enterprises has brought with it an augmentation of industries which depend for their existence on a continuous and sufficient supply of raw farm products. Thus the new town of Turlock shows increased business activities directly dependent upon farming, having an investment of $550,000 giving annual employment to the equivalent of 300 people, while the total payroll runs to about $200,000. Such businesses include:

G. W. Hume Company (large cannery).

Hunt-Jewett-Bonz Co. (cured sweet potato factory).

Turlock Merchants and Growers, Inc., as the name implies, is a mutual cooperative marketing, financing, and storing concern, run principally in the interest of the farmers.

California Peach Growers Association —a branch packing house, while shipping facilities are maintained by many other concerns dealing in the product of the district.

Change in Defaulting

Mortgage Foreclosures Nominal

In the pre-irrigation decade fully one-half of the ranches were mortgaged, of which 25 per cent had to be foreclosed. In the post-irrigation period, the number stood at 37½ per cent of the district at a prevailing rate of 7 per cent. Foreclosures in this period for the past ten years have averaged four per year, and sales under trust deeds eight per year, notwithstanding the great increase in population of the present period, i.e., 4,000 farms against 140.

Miscellaneous

State Board Buys 8000 Acres

The second unit of the California Land Settlement Board has been selected from the land in this district, 8,000 acres having been purchased close to Delhi on the Southern Pacific Railroad and Denair on the Santa Fe Railway.

Summary of the Turlock District

Data condensed for purpose of ready reference.

ITEM—	Pre-Irrigation Period 1890-1900	Post-Irrigation Period 1915-1919
Number of farms.....	140	4,000
Average size of farms, acres	1,250	40
Population:		
Rural	800	10,000
Town of Turlock....	150	5,000
Total	950	15,000
Land values, average per acre ....$	25	$ 200
For district total.....	4,403,000	26,061,900
Value of improvements and equipment	1,656,200	22,047,000
Total value of farm property	$6,059,200	$48,108,900
Average annual gross value of farm output	$345,000	$9,000,100
Cost of production....	143,000	4,500,000
Available for family living, depreciation, profits, discharge of obligations, and replacement and institution of improvements	$202,000	$4,500,000

Fundamentals of Success

Important Considerations in Irrigation Projects

There were early failures in attempting the formation or the financing or the developing or the carrying out of irrigation districts. Modesto and Turlock are two of the successes. A study of their history emphasizes the importance in any district of:

(a) A topography which can be economically put in shape for the conveyance and distribution of irrigation water.

(b) A sufficient water supply, economically developed and all lands to be leveled.

(c) Lands of a character adapted to irrigation farming. This usually means a change to intensive from extensive operations and the production of a variety of crops, stock, and stock products.

(d) A fair initial land value.

(e) An augmentation of the supply of farmers for the district.

(f) A knowledge on the part of the producers of irrigation farming methods.

(g) Development of markets and means of marketing the products from irrigation farming.

(h) Intelligent, economical, and experienced handling of the details of construction and subsequent operations of the water system.

And last but not least:

(i) A market for the bonds or other financial backing to insure completion of the work.

Water,
Wealth,
Contentment,
Health

Full realization of the prosperity, progressiveness and possibilities of both the Modesto and Turlock Irrigation Districts cannot be gained short of a personal trip through the many communities that go to make up the area. Photographs and written description are entirely inadequate for portraying the real situation. A day spent touring these districts unfolds a succession of real homes, a vista of fields, vineyards, and orchards, and an intermingling of dairy, hog, and poultry farming.

Verily, it is a country of "Water, Wealth, Contentment, Health."

Legal Aspects

of

California Irrigation District Bonds

Misconceptions to be Corrected

IN the reported discussion relative to Irrigation District bonds at the recently held Investment Bankers of America convention at St. Louis, statements were made which would indicate that certain speakers have an almost total misconception of the characteristics of these bonds, at least as far as the California districts are concerned. Many statements made were so fundamentally incorrect as to call for a clear reply.

Really a Municipal Bond

Taxing Power Is Basic Feature

Montgomery Rollins defines a municipal bond as, "Any legally authorized bond issued by village, township, city, county, state or any territorial subdivision of the same, the payment of which must be accomplished through the collection of taxes assessed upon the property embraced in the division or subdivision issuing the bond."

California Irrigation Bonds Have Taxing Power Back of Them

Both principal and interest of California irrigation district bonds are paid by taxes levied against all real property within the district upon an ad valorem basis under the sovereign power of taxation inherent in the State of California. These taxes are levied and collected by officers of a political subdivision of the state, elected just as other elective officers are elected.

On the Same Basis as Other "Municipals"

It was stated in the discussion above mentioned that the payment of the interest and principal of an irrigation bond is provided for upon an entirely different basis than a municipal bond. There may be, speaking with legal technicality, some truth in this statement, but as a practical matter the statement is absolutely incorrect. In both cases an annual ad valorem tax is levied by the public officers of a political subdivision of the state, elected by the residents therein, upon the property within such political subdivision for the payment of interest and principal, which tax in both cases is payable at a fixed time, and in both cases the non-payment is attended with substantially the same results—a little more severe in the case of irrigation districts than of other municipal bonds.

Only Difference Is in Favor of Irrigation Bonds

If there is any difference it lies in this, that for a failure of the officers of a city or town to levy necessary taxes, there appears to be no remedy except at law, but in an irrigation district should the officers fail or refuse to perform their duty, automatically this duty must be performed by officers of the county in which the irrigation district is located, and these county officers are responsible, under their official bond, for the faithful performance of such duty. Also, should the county officials fail or refuse, the obligation automatically is imposed upon the Attorney General of the state to see that such duty is carried out.

In other words, the machinery of the assessment and collection of taxes in California is entirely in favor of the irrigation district as against cities and towns.

Limit of Indebtedness Effective

Amount of Indebtedness Limited

The statement was also made that there is no debt limit. This is also quite incorrect. The law specifically provides a maximum debt limit. In the case of a city the law provides that the indebtedness shall not exceed a certain percentage of the assessed value. Local officers elected by those interested and themselves interested in the collection and expenditure of the money in a city, fix the assessed value and levy and collect the taxes. There is no independent tribunal to determine whether or not they have exceeded their power in fixing the assessed value upon which the city's debt limit is based. In the case of a California irrigation district the Superintendent of Banks, Attorney General and State Engineer are charged with the duty, not only of investigating thoroughly the security behind proposed bonds to be issued, and determining the value thereof in order to see that the indebtedness does not exceed the limit prescribed by law, but it is their duty to refuse to certify to the bonds if in their opinion such bonds do exceed the limit imposed by law. Likewise it is illegal for a district, any of whose bonds have been certified by the state, to issue more bonds unless they too receive state approval, as legal for investment by savings banks, etc.

Machinery of Taxation Similar to Cities

County and State Machinery Provided For

The criticism that the collection of principal and interest is in hands of officers who are among the consumers and who therefore might be unwilling to enforce the law, is again far from a fair statement. As stated above, not only are the irrigation district officers in exactly the same position as officers of a city, but in the case of an irrigation district the neglect or refusal of any officer in the district to hold office would not in the slightest degree affect or interfere with the levy and collection of the assessment. Every man in the irrigation district might be opposed to the collection of taxes and might refuse to hold office, but the machinery of the county would be obliged, under the law, to step in and levy the assessment and collect the taxes due regardless of the feelings or attitude of the people in the district. The county officials are responsible under their official bonds for the faithful performance of this duty exactly the same as other county duties. The law further recites that the State Attorney General must order the court to issue a writ of mandate compelling this action by county officials should they for any reason fail to perform their duty. No such drastic machinery has been provided for the payment of taxes by California cities. There are cases where other political subdivisions have escaped taxation by the refusal of individuals to hold office, but this has never happened and cannot happen in a California irrigation district.

Security Better Than Where Assessments Against Benefits

Security Increased by Improvements

There also appeared to be in the mind of the critic who made this speech some obscure impression of unfavorable comparison of these bonds with those issued by political subdivisions in which assessments are levied against benefits, for the reason that the improvements in question, some way or another, added to the security of the bonds. Again, a very important feature of the securities of an irrigation district was lost sight of. The proceeds of state-approved California irrigation district bonds can be used only, with some very limited exceptions, to secure property or to make water improvements. Such property and such improvements has a separate and distinct value entirely apart from the value of the land within the district boundaries. These expenditures of money can only be made with the consent and approval of the State Irrigation District Bond Commission, consisting of the Attorney General, State Engineer, and Superintendent of Banks, and as a matter of actual practice the money received from the sale of bonds goes entirely into the construction and acquisition of water rights, reservoirs, canals, and other property which itself, and apart from the land values, is worth all or more than the entire amount of the bond issue. Consequently, the actual security for these bonds is the actual value of the farming land within the district boundaries, plus the value of the property for which the proceeds of the bonds are expended.

Not Comparable with Industrials

Better Secured than "Industrials"

This same critic whose assertions are responsible for this letter has no great hesitancy in purchasing industrial securities whose security is mainly the property acquired by the proceeds of the bonds or stock, as the case may be, and yet is apparently worried because in addition to such property acquired from the proceeds of security sales, irrigation district bond holders enjoy the security of the richest and most attractive agricultural land in all California. Any attempt to compare these irrigation district bonds with public utility bonds demonstrates a primary misconception of the entire irrigation district act and its machinery. As in the case of industrial securities, the public utility bond frequently has for its security merely the property acquired by the expenditure of the money realized from security sales, while validated California irrigation district bonds have all that and much more in addition.

Security is Fundamental

As Certain of Payment as any "Municipals"

As a matter of fact, under our excellent laws, a California irrigation district bond issued under the supervision and control of the State Irrigation Bond Commission, as far as the actual safety of principal and interest is concerned, is just as certain of payment as any other California municipal security.

Over $25,000,000 Outstanding in California

There are today upwards of $25,000,000 of these bonds, issued under the famous Wright Act of 1897, outstanding in California, which have been purchased mainly by local savings banks, insurance companies, trustees, executors, and guardians. There has never been a default or loss of a dollar in either principal or interest to any holder of these bonds. It is a well-known fact that no class of bonds are more popular among informed investors in California today than these state-approved irrigation district bonds, which are as completely exempt from Federal Income Tax as First Liberty Loan 3½s and Federal Land Bank bonds. Incidentally, the Federal Land Bank is lending money against California land located in irrigation districts and these mortgages are junior to the lien of the irrigation district bonds.

Credit Record Perfect

While no investment or legal machinery is absolutely perfect, it is very doubtful if any system could be devised which would prove more workable under which substantially better protection would be afforded to investors than is now given under the California irrigation district act to holders of such state-approved bonds.

L. L. DENNETT in *Bond Buyer*.

The Irrigation District Bond

as an

Investment

Farm Land is Basis of All Wealth

FARM land is the basis of all wealth and business activity. What security would there be in municipalities, railroads, or manufactures were farm lands to fail to produce?

Water a Necessity

Water is as essential an element as air in making farm land productive and there is no substitute for it. In California and other western states moisture is provided artificially during the summer months, when there is practically no rainfall, by the employment, through the practice of irrigation, of the abundant supply of water in mountain-fed streams and from subterranean sources. This utilization is brought about through the construction of diversion dams, storage dams, reservoirs, wells, canals, and distributary systems.

Irrigation Districts are Political Subdivisions

Over thirty years ago (in 1887) the California legislature passed a law prescribing the creation of political subdivisions of the state to be mediums through which water could be provided for crop-growing purposes. These political subdivisions, known as Irrigation Districts, are now a well-established institution in California, Oregon, Washington, and other western states. In California alone, more than 1,000,000 acres, supporting directly more than 100,000 people, are permanently improved by water systems which are being successfully operated by Irrigation Districts.

In the Nature of School Districts

A California Irrigation District is organized under the jurisdiction of a county, the procedure resembling that followed in the case of a school district. After organization has been effected the affairs of a district are administered by a board of directors, assessor, tax collector, and treasurer. Like a county, city, and school district, an Irrigation District has two sources from which to derive funds with which to meet its operating and construction expenses, namely, the application of the sovereign power conferred upon it by law to tax all land within its boundaries and the power to borrow money by issuing bonds.

Obligations Are Tax Lien

The principal of California Irrigation District bonds (retired in serial installments) and the interest thereon are payable (at the office of the Treasurer of the district) with funds derived from the collection of a tax which is levied annually on all land in the district. Until paid the tax is a lien on the land ranking ahead of first mortgages. Even though a property owner may not directly use the water, he is taxed at the same rate as one who does; just as a school district tax is levied uniformly on all property owners and not simply on those whose children may attend school.

Entire Property Liable for Assessment

The equalized assessed value of real estate, and not the amount of water used, is the basis on which the property owner is taxed. As the prosperity of the entire population of the district depends, directly and indirectly, upon the continuing availability of the water, the moral certainty that the tax will be paid is excellent. Nevertheless, a severe penalty is prescribed for allowing the tax to become delinquent, viz.: the sale of the property at auction, as in the case of a county, city, or school district.

Obligation Same as for Other Taxes

The obligation to pay a tax levied by an Irrigation District is just as positive as the obligation to pay a tax levied by a county, city, or school district. Said obligation does not depend upon the date of completion of the irrigation system, the amount of water used by a taxpayer, or any other condition; any more than the obligation to pay a county, city, or school district tax depends upon the date of completion or the use a taxpayer makes of a highway system, a domestic water supply, or a school house.

Assessed Values Less Than Real Security

In the case of California Irrigation Districts, the assessment roll is prepared and equalized by Irrigation District officials who likewise attend to levying and collecting the tax. The values shown on the assessment roll are for the land alone. Improvements (buildings, trees, vines, etc.) and personal property, which are assessed by counties, cities, and school districts, are not assessed by California Irrigation Districts. Therefore, the assessed valuation does not indicate the real values which are "pledged" to "secure" the payment of an

Irrigation District bond issue. Furthermore, the assessed valuation does not include the value of the irrigation system, which is generally equal to the total bonded debt.

Validated Bonds Legal for Savings Bank Investment

Upon being approved by the State Irrigation District Bond Commission (consisting of the State Superintendent of Banks, State Engineer, and Attorney General), bonds issued by an Irrigation District become a legal investment for California savings banks, trust companies, trust funds, and insurance companies; and legally acceptable as security for state, county, and city funds in California banks. The bonded indebtedness of a district which has been validated by the above commission is legally limited to 60 per cent of the market value of the bare land (exclusive of all improvements) and the irrigation system.

Exempt from California Personal Property Tax and Federal Income Tax

California Irrigation District bonds are exempt from the personal property tax in California. The income derived from such bonds either by an individual or a corporation is entirely exempt from the Federal Income Tax, no declaration of ownership being required when coupons are collected. The status of said bonds in the above respect is identical with that of the state, county, city, and school district bonds.

Care in Selection of Investment

While it is true that there has not been any default or delay in the payment of interest or principal by any California Irrigation District which has issued bonds under the amended Irrigation Act of 1897, Irrigation District bonds, in common with all other forms of investments, should be selected with intelligent discrimination. The safety of such bonds depends far more upon the tax-paying ability of the property owners than upon legislation which prescribes the tax-paying obligation. Said tax-paying ability in turn depends upon such characteristics as (1) location, (2) natural advantages, (3) soil, (4) drainage conditions, (5) state of cultivation, (6) population, (7) nature of crops, (8) sufficiency and source of water supply, (9) type and condition of irrigation system, (10) present and future cost of water per acre per annum, and (11) future bond issuing necessities—financial requirements.

If the above essential physical features of an Irrigation District are favorable, its bonds should constitute a desirable investment: because their stability is unlikely to be diminished by economic, political, or commercial changes.

Fundamentally Strong

They are the medium through which a community becomes the owner of a system to furnish a productive necessity at cost. Their character is fundamentally strong.

In Conclusion

INVESTMENT is a serious business. Every investor, whether he be a banker with funds running into the millions or an individual with savings of $1,000, wants perfect security for his money and as high a rate of interest as is consistent with safety.

"The Marvel of Irrigation" has actually created in the past quarter of a century a type of municipal bond which has taken its place alongside the best city and school district bonds.

Irrigation Districts as administered under California Laws, and the laws of those states which have followed California, have made a record as perfect debtors.

More than a hundred districts have been functioning, some of them for upward of 30 years without a single instance of default or delay in the payment of principal or interest. This is not mere good fortune, it is because these bonds have back of them the taxing power of the commonwealth in the same degree as has every municipal bond.

Turlock and Modesto are two out of a hundred or more districts. These two have had time to demonstrate the basic soundness of irrigation district finance and management to a further degree than some other districts; but otherwise Turlock and Modesto are neither remarkable nor unusual.

What is happening in those two districts is happening in other districts. Wealth and values are being created up to many times the amount of the irrigation debts which make this prosperity possible.

In conclusion, we emphasize one remarkable feature of Irrigation District bonds. This type of bond is the only one that has the best features of both municipal and industrial bonds.

The best feature of an industrial bond is that the borrowed money becomes a part of the industry's productive capital. The investor feels that his money is being used to make more money. That, in the long run, is his security.

That is not true of a ''municipal.'' Only in a very general sense can it be said that money loaned to a city or county or school district goes to increase the productive capacity of the municipality or to create new wealth. The investor does not rely upon that for his security. He relies on the taxing power of the community to pay him without regard to the community's prosperity.

The Irrigation District Bond unites these two strong features. The installation of an irrigation system is a capital investment such as an industry might make—and results directly in the creation and addition of new wealth to the security back of the debt. At the same time by reason of its having back of it the taxing power, the Irrigation Bond has all the further security of a "municipal."